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## THE OSPREYS OF THE YELLOWSTONE

By M. P. SKINNER

WITH ONE PHOTO

THE OLD-TIME beaver trappers, gold miners, and explorers in the West were too oblivious of bird-life to leave us any records. But since the earliest of the scientific parties to visit the Yellowstone record the abundance of ospreys\*, we can assume that this region has always been a favorite habitat for them. At the present time these birds attract a great deal of attention from tourists, who know them as "eagles". It is not strange that they should, for the birds are lying in the Grand Canyon of the Yellowstone where the nests are plain to be seen and the ways of the birds are open to all who will watch them. I know of no easier bird-study than this. One has but to find a shady spot with a stone or a log for a seat; the birds are immediately below one; and there are no discomforts of wet feet, blazing heat, or insect pests. If one wishes, a book can be taken along; and always there is the wonderful scenery of the Yellowstone Canyon, should both bird-study and book lose their interest. It comes as near being "ornithology de luxe" as can be.

Most of Yellowstone Park is an elevated lava plateau from which the streams descend by waterfalls. Hence under natural conditions there were formerly no fish above these falls with the exception of Yellowstone River and Yellowstone Lake. It was along this river and its tributaries, the lake and the lower parts of other streams, that the ospreys were abundant. In 1889 the planting of trout in the formerly barren streams was begun. This stocking was successful; all the principal streams now have fish, and the ospreys are just beginning to establish their homes near them. The process is a slow one, for the conservatism the osprey shows in nesting year after year on the same site would prevent his rushing into new hunting grounds. In the two-mile sec-

\*The American Osprey (*Pandion haliaetus carolinensis*).

tion of the canyon below the Lower Falls there are twenty-five pairs of ospreys, thirty nests are along the west shore of Yellowstone Lake, one in Pelican Valley, one at Mud Volcano near Hayden Valley, two on the upper Lamar River,



FIG. 43. OSPREY AND ITS NEST, ON "EAGLE NEST ROCK", IN THE GARDINER RIVER CANYON, YELLOWSTONE PARK.

Copyrighted photo by Haynes, St. Paul.

one in Gardiner Canyon, and one in the Upper Geyser Basin. I believe there is double this number of occupied nests in the whole Park, or a total of one hun-

dred and twenty pairs of ospreys regularly breeding there. There are also two old, or abandoned, nests for each occupied one. Most ornithologists would surely rank this bird as abundant here, and I believe this abundance is due to the large quantities of easily obtainable fish as much as to the absolute protection afforded. As trout are the only large fish to be had, sportsmen-tourists are sometimes antagonistic to these rivals of the air. But there are certainly fish enough for all; and when it is considered that the ospreys catch mostly the wormy fish whose malady makes them an easy prey by bringing them near the surface, and less alert to the plunging danger from above, we see that they are really improving the stock by removing the diseased members.

Ospreys arrive at the low-altitude Gardiner River Canyon about April 17 (my earliest date is April 15, 1915), but it is apt to be two weeks later before they reach the Yellowstone Canyon and Lake; even so, early May is well on the snowy side of the year. The birds are already paired off (in fact they are believed to mate for life), and immediately start their hunt for a nest site. Although they may have nested at a certain place for years, they go through the form of site-hunting each year and then finally return to the old nest. Undoubtedly the normal nesting site of an osprey is the tip of a tall spruce, pine, or fir on or near the water's edge. I do not think there is any preference shown for either living or dead trees, but it is likely that the nesting often kills the tree. In certain canyons, notably the Gardiner, Gibbon, and Yellowstone canyons, the ospreys have chosen to build their homes on the tips of sheer, out-jutting pinnacles of rock whose tips are completely covered by the nest. That these prove reasonably safe can be deduced from their continued use over a long term of years; yet I have observed that the mortality among the young is high, only about one-half reaching maturity.

Repairing the nest (I cannot corroborate from my own observation the statement that this bird repairs its nest in the fall) is soon finished. It is then four feet or more in diameter and made of a great mass of sticks some of which may be as large as a man's wrist, usually secured by the bird dropping heavily on the dead limb of a tree and at the same time giving it a peculiar wrench with his strong feet. Coarse grasses, pine needles, pieces of bark and other rubbish are placed on top. Most of the nests are close to the water, but some are a mile or more from it. As a rule there is quite a delay from the finishing of the nest to the laying of the eggs. I have found sets of eggs as early as May 20, and have known of other sets not completed until June 25. Even the earlier of these dates is very late; but is evidently due to the late date (often mid-June) that ice remains in the lake; and the stream-haunting birds are delayed by the June rise of the streams. Fish is to be had in these streams before the rise, but evidently the birds do not consider it safe to risk their young against the usual conditions of May and June; perhaps also the late snows of June might have their effect on the exposed birds. About Yellowstone Lake, with an altitude of 7800 feet, nesting is fully as early as in Gardiner Canyon at 5500 feet.

Two or three eggs constitute a set and they are brooded for twenty-eight days by the female, who remains continuously on the nest except that during a warm, sunny day she may venture to leave for a short time. I have often wondered why the nests were so large. Can one of the reasons be to afford the young room to find a cool spot? While the temperature in the shade reaches a maximum of only 80 degrees, on the sun-baked floor of the exposed nests it is

115 degrees, although a good breeze may bring the general temperature down to a hundred degrees. How comfortable for the young birds to move out to the edge of the nest! Here they usually sit in a row facing in and towards the wind if there is any. Before they are large enough to do this, they must of necessity remain in the shade of the half-raised wings of the mother, who remains on the nest to shelter them for at least two weeks, and at intervals for a week longer, after the incubating period. The whole osprey family might serve as a model of deportment. While the mother is busy brooding the eggs, her mate is away fishing for her; when he brings in her fish, as he does at quite regular intervals, he tears it up and gives it to her in small pieces. Later he redoubles his activities and brings in trout for both the nestlings and their mother.

One morning I came in sight of a nest containing three young birds. The female was on the nest with her back to the sun and her wings drooping slightly. Just in front of her breast in the shade were her babies, each clad in light brown down that could barely be made out against the floor of the nest. The father was on a dead pine a quarter of a mile away, with a fish from which he had removed the head and entrails. Soon two or three shrill whistles were sounded by the female, which proved to be the food call; for the male dropped down to the nest immediately thereafter. The mother stood up and the four-day-old youngsters arranged themselves in an orderly row; no attempt whatever was made to get to the fish although it was only three inches from their bills. The male stood on the fish (a trout of about one pound weight) and tore it up, giving it bit by bit to the mother, and occasionally a tiny bit to a nestling. It was the mother, however, that did most of the feeding. She received the fish in pieces not larger than half an inch in diameter, reduced them to still smaller size, and fed each bird in turn until all were satisfied. Then the mother ate the remainder, and I believe the bones and skin were also consumed. The male flew back to his stub to preen while the mother settled down once more to shelter her young. The whole scene from the first food call at eight o'clock lasted only half an hour. At a later date I observed that the fish was occasionally turned over entire to the female.

The careful training that young ospreys receive is further shown when a nest is approached. On hearing the whistled alarm given by a parent, usually the mother, the young birds throw themselves flat on the floor of the nest often with necks and wings outstretched. When the observer reaches the nest no movement is to be seen; the nestlings permit one to take them up, turn them over, or place them in any position without offering any sign of life beyond the half-open, staring eyes. After the nest is left, the young ospreys maintain their position until the parents have given the reassuring signal. I have seen half-grown ospreys hold this inert posture for an hour and twenty minutes while the parents were flying about or even standing on the edge of the nest, but no motion whatever was made until the proper signal was sounded. Young ospreys are not fast growers, but at ten days of age begin to show black on the primaries; and ten days later, more distinctive markings commence to appear. From thirty-five to forty-five days after hatching they leave the nests fully feathered and strong of wing.

Only once in my experience have I seen ospreys fight among themselves and that was due to disputed ownership of a trout. In the Yellowstone, at least, the ospreys live in perfect harmony with smaller birds. An impressive instance was to see a bird plunge into a creek within a few feet of a two-week

old brood of Mallard without disturbing the ducklings in the least. The only belligerent moves I have ever noticed was the driving away of ravens and gulls from the vicinity of the nests.

The osprey uses the rivers of the Park rather than the lakes for hunting grounds. He hunts either up or down stream, flying along with slow, heavy flaps that give him an undulating flight. When he sights his prey he stops and hovers for a few moments; perhaps the fish is too large or in an unfavorable position. If so, flight is resumed. Suddenly he stops, and after an instant's hesitation, closes his wings and shoots downward; as he nears the surface his long legs reach down, and at the moment he enters the water, his talons sink deep into the back of the fish. Seldom does he fail to make his catch. After a shake or two, he is off to his nest or to a favorite perch to devour his dinner. He is light in weight, rarely more than three pounds, and it is marvellous how many miles he can carry a fish of one-third his own weight. Fish are carried head foremost but I note no preference as to whether the fish is right side up or not. I imagine if the original striking hold is retained, the fish is carried back up; but if for any reason the grasp is shifted then the side or even the belly becomes uppermost. It is often the case that if a fish is dropped, no apparent effort is made to recover it, whether it falls into the water or on land.

The departure of the ospreys takes place about the middle of September (September 25, 1914, being the latest date in my records). This early departure is noticeable, for other fish-eating birds remain later. Gulls do not leave until November, and kingfishers and mergansers remain all winter to fish in the streams kept open by the warm geyser water. Yet the osprey seems to be as well protected against the cold as they.

*Summerville, South Carolina, May 10, 1917.*

## HABITS OF THE MAGPIE IN SOUTHEASTERN WASHINGTON

By LEE R. DICE

(Contribution from the Zoölogical Laboratory, Kansas State Agricultural College, No. 13)

WITH TWO PHOTOS

MAGPIES (*Pica pica hudsonia*) are abundant in the timber along the streams in Walla Walla County, Washington. They also wander considerable distances out into the bare bunchgrass hills, though they are rare in the open and retreat to thick brush or timber, when alarmed. Except during the breeding season, magpies travel in flocks. These flocks are usually small, though in winter any number of individuals up to about fifty may be found together.

Nesting occurs very early in the year, and near Prescott the young are often able to fly before the first of May. In the appended table are given the records of nesting obtained in the years 1905, 1906, 1908, and 1913. All of the nests reported were found in the timber along the Touchet River about two miles east of Prescott. Other duties of the author interfered with regular observations, so the records are not at all complete.

The average number of eggs in a set, calculated from thirteen apparently